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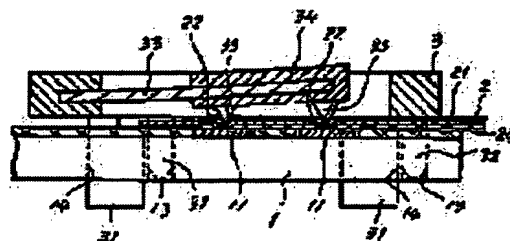
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(54) TAB MOUNTING STRUCTURE

(57)Abstract:

PROBLEM TO BE SOLVED: To ensure an always good electric connection state following an environmental change and to enable high density electric connections of fine pitch terminals by elastically pressing a projection elastically supported by a connection holder toward a TAB and elastically pressing a connecting electrode to a connecting land by the elastic force thereof.

SOLUTION: A projection formed body 34 of a connection holder 3 is elastically pressed to the tape-type electrically conductive lead (TAB) 2 side by a spring force of a plate spring 33, thereby a projection 35 provided on the projection formed body 34 presses a connecting electrode 22. Thus, the connecting electrode 22 and the connecting land 11 are brought into direct contact and the connecting electrode 22 and the connecting land 11 are electrically connected together. This electric connection state is held by the spring force of the plate spring 33 of the connection holder 3. The plate spring 33 has a thickness of, e.g. not larger than 0.5mm, and is formed of stainless steel, etc., having an elastic force and good restoring force, and the strength of the spring is set according to the thickness, the size and the hardness of the plate spring 33.



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CLAIMS

[Claim(s)]

[Claim 1] In the TAB mounting structure where carry TAB on the circuit board, the connection land prepared in the circuit board and the connection electrode prepared in TAB are contacted mutually, and it was made to perform electrical connection TAB mounting structure characterized by having the projection which elastic support is carried out to the connection supporter detached and attached by said circuit board and this connection supporter, and is oppressed towards said TAB so that said TAB may be put between the circuit boards, and presses said connection electrode to a connection land according to that suppression force.

[Claim 2] It is the TAB mounting structure of claim 1 where two or more projections by which the correspondence location was carried out are prepared in a projection organizer in one at two or more connection electrodes and connection lands, and elastic support of this projection organizer is carried out to a connection supporter by elastic material.

[Claim 3] Elastic material is the TAB mounting structure of claim 2 which an end is the flat spring by which support-at-one-end support was carried out at the connection supporter, and comes to support a projection organizer to the other end of this flat spring.

[Claim 4] Elastic material is the TAB mounting structure of claim 2 which are elastic materials, such as resin or rubber, and it comes to insert between a connection supporter and a projection organizer.

[Claim 5] In the TAB mounting structure where carry TAB on the circuit board, the connection land prepared in the circuit board and the connection electrode prepared in TAB are contacted mutually, and it was made to perform electrical connection The connection supporter which consists of elastic material detached and attached by said circuit board so that said TAB may be put between the circuit boards, TAB mounting structure characterized by having the projection which is supported by this connection supporter, is oppressed towards said TAB, and presses said connection electrode to a connection land according to that suppression force.

[Claim 6] Claim 1 which inserts in said locating hole the locating lug which the locating hole was established in the circuit board and TAB, and was prepared in the connection supporter or the projection organizer, and performs positioning with the circuit board and TAB and a connection supporter, or a projection organizer thru/or one TAB mounting structure of 5.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] About the TAB mounting structure of mounting a tape mold electric conduction lead (TAB: Tape Automated Bonding) in the circuit board, especially, this invention is removable and relates to the TAB mounting structure which made high density assembly possible.

[0002]

[Description of the Prior Art] When performing TAB mounting conventionally, the structure which used wax material is adopted. for example, the connection land 101 by which the technique of drawing 7 was formed on the circuit board 1 -- wiring of TAB2 -- with the wedge 104 which heated the connection electrode 103 formed with the conductor 102, solder 105 is melted and it is mounting by connecting electrically and mechanically. moreover, the thing which the splicing fitting 203 of the connector configuration of a lead terminal 202 and one is inserted in the interior of the resin object 201, and the technique of drawing 8 inserts one flank of TAB2 into the resin object 201, and is made to slide the slide stopper 204 -- wiring of TAB2 -- the connection electrode 206 currently formed in the conductor 205 is electrically connected to splicing fitting 203. Moreover, the lead terminal 202 projected from the resin object 201 is connected electrically and mechanically using solder 207 by carrying out connection immobilization at the connection land 208 of the circuit board 1.

[0003] However, in these Prior arts, since TAB and the circuit board are connected fixed with solder, it is necessary to melt decision and there is a problem that the workability of attachment and detachment is bad, at the time of attachment and detachment of TAB. Moreover, it flows even into the terminal with which the fused solder adjoins, and will be easy to be in a short circuit condition, and application to TAB which has the terminal of a detailed pitch is difficult, and has been the failure of high density assembly.

[0004] On the other hand, in recent years, it connects without using solder and the mounting structure which made attachment and detachment of TAB easy is proposed. For example, in JP,4-229692,A, the connection land 301 and the connecting location fixed hole 302 are established on the circuit board 1 like drawing 9 . Two or more locating holes 303 same moreover and the TAB segment 4 which has arranged the electric conduction terminal 304 of many letters of a projection are laid. This electric conduction terminal 304 is a detailed terminal with which the electric conduction side was exposed by each on the rear face of front of the substrate of a segment 4. Furthermore, TAB2 by which the components 305, such as IC chip, were carried on it is laid. The connection electrode 306 arranged so that a correspondence location may be carried out with said connection land 301, and a locating hole 307 are established in this TAB2.

[0005] And lay the resin object 5 for immobilization on it, and it positions by putting two or more projections 308 prepared in this in said locating holes 307 and 303 and the connecting location fixed hole 302. And by fixing the point of projection 308 by technique, such as adhesion or a caulking, on the inferior surface of tongue of the circuit board 1, where it turned the resin object 5 for immobilization to the circuit board 1 and it is pressed The connection land 301 of the circuit board 1 is electrically connected with the connection electrode 306 of TAB2 through the electric conduction terminal 304 of the TAB segment 4. In addition, the resin object 5 for immobilization is using hard resin, such as acrylic resin or vinyl resin, in order to obtain thrust sufficient on the whole.

[0006]

[Problem(s) to be Solved by the Invention] Since solder is not used for this official report with the technique of a publication, it is possible to detach and attach TAB easily. However, since connection immobilization of the circuit board 1 and TAB2 is carried out in the condition of having pressed with the resin object 5 for immobilization, when the circuit board 1 is deformed by the external factor, the resin object 5 for immobilization which consists of rigid resin cannot follow this deformation, breadth and electric connection are spoiled for spacing of a connection, or there is a problem that conductivity deteriorates. Moreover, in the location where change of an operating environment is large, since change of the configuration accompanying degradation of resin object 5 the very thing for immobilization cannot be followed, electrical installation will deteriorate. The purpose of this invention is to offer the TAB connection structure which an environmental variation is followed, and an always suitable electrical installation condition can be secured, and can perform electrical connection of the terminal of a detailed pitch by high density.

[0007]

[Means for Solving the Problem] Elastic support of the TAB mounting structure of this invention was carried out to the connection supporter detached and attached by the circuit board and this connection supporter, and it was oppressed towards TAB so that TAB which carries out electrical connection to the circuit board might be put between the circuit boards, and it is equipped with the projection which presses the connection electrode of TAB to the connection land of the circuit board according to that suppression force. In this case, two or more projections by which the correspondence location was carried out are prepared in a projection organizer in one at two or more connection electrodes and connection lands, and this projection organizer is taken as the configuration in which elastic support is carried out to a connection supporter by elastic material. Moreover, as elastic material, flat spring, resin, or rubber is used.

[0008] Moreover, this invention is good also as a configuration equipped with the projection which constitutes the connection supporter detached and attached by the circuit board from elastic material, is supported by this connection supporter, is oppressed towards TAB, and presses a connection electrode to a connection land according to that suppression force.

[0009]

[Embodiment of the Invention] Next, the operation gestalt of this invention is explained with reference to a drawing. Drawing 1 is the partial decomposition perspective view of the 1st operation gestalt of this invention, and drawing 2 and drawing 3 are each sectional view of the direction of a transverse plane and direction of a side face. the connection land 11 for connecting TAB2 on the circuit board 1, as shown in these drawings, and wiring -- the insulator layer 12 of a wrap sake is formed in the conductor. Moreover, the connecting location fixed hole 13 is established in the four-corners location around said connection land 11, respectively, and the crevice 14 of a pair is formed further the both-sides side, respectively.

[0010] moreover, the thing for which said TAB2 removes two or more places of the insulating film 21 -- wiring -- some conductors 24 (refer to drawing 4) are exposed from the insulating film 21, and the connection electrode 22 is formed. The correspondence location of these connection electrodes 22 is carried out at the connection land 11 of said circuit board 1, respectively. Moreover, four alignment holes 23 are established by TAB2 in the location corresponding to the connecting location fixed hole 13 of the circuit board 1.

[0011] The connection supporter 3 is formed in the shape of [rectangular] a frame from PBT resin, PPS resin, etc., and the stopper 31 of the shape of a hook which engages with the crevice 14 of said circuit board 1 the both-sides side is set up. Moreover, the projection 32 for alignment of four corresponding to said connecting location fixed hole 13 and the alignment hole 23 turns caudad, and is projected and formed in one. In this case, the stopper 31 has given the flexibility of extent in which it does not break by the stress added at the time of mounting of TAB2. And inside said connection supporter 3, support-at-one-end support of the flat spring 33 is carried out towards the core from one of them, and the projection organizer 34 is supported by the point.

[0012] Said flat spring 33 is elastic by 0.5mm or less in thickness, and is the insert molding approach and really [resin] uniting the end face section with the connection supporter 3 by the shaping approach using stable good stainless steel etc. Moreover, said projection organizer 34 is formed with an insulating material, and projection 35 projects in the inferior surface of tongue, and it is formed in

the location corresponding to said connection land 11 and connection electrode 22 on it, respectively. The include angle as which these projections 35 regarded the tip from the side face considers as less than 10 - 150 degrees, and the tip of a projection is giving a radius of circle and surface smoothness with the arrangement spacing dimension of said connection electrode 22.

[0013] thus, in assembling the constituted circuit board 1, TAB2, and the connection supporter 3 The projection 32 for alignment of the sequential connection supporter 3 is first put in the alignment hole 23 of TAB2, and the connecting location fixed hole 13 of the circuit board 1. By equipping the crevice 14 of the circuit board 1 with the stopper 31 of the connection supporter 3 furthermore, so that the circuit board 1 may be put, and engaging both, the connection supporter 3 is attached in the circuit board 1 in one, puts TAB2 among both by this, and presses TAB2 to the circuit board 1.

[0014] And in this condition, since the projection organizer 34 of the connection supporter 3 is oppressed according to the spring force of flat spring 33 at the TAB2 side as the sectional view of a mounting condition is shown in drawing 4, the projection 35 prepared in the projection organizer 34 pushes the connection electrode 22 against the connection land 11 side of the circuit board 1. Thereby, the connection electrode 22 and the connection land 11 are contacted directly, and both are connected electrically. This electrical connection condition is maintenance **** by the spring force of the flat spring 33 of the connection supporter 3. The strength of the spring of this flat spring 33 is set up with the thickness of flat spring and magnitude, and a degree of hardness. Moreover, projection 35 needs to set height on either side as a different amount a little in the condition of pushing the connection electrode 22 of TAB2, in consideration of the inclination of the projection organizer 34 by the curvature of flat spring 33.

[0015] Moreover, the mounting precision of TAB2 is determined with this operation gestalt by the path clearance to the circuit board 1, TAB2, the precision at the time of each formation of the connection supporter 3, and the diameter of the cylinder of the connecting location fixed hole 13, the alignment hole 23, and the projection 32 for alignment. In addition, when the connection land 11 and the connection electrode 22 have been alternately arranged in two trains like this operation gestalt, mounting of the wiring conductor spacing of TAB of 0.2mm spacing is possible.

[0016] If it secedes from the crevice 14 of the circuit board 1 from the stopper 31 of the connection supporter 3, TAB2 can be made to be able to secede from the circuit board 1, and as compared with the configuration using solder etc., TAB can be detached [according to this operation gestalt] and attached easily. Moreover, since the projection organizer 34 is supported by flat spring 33 and is contacting the connection electrode 22 and the connection land 11 by the projection 35 according to the spring force of this flat spring 33 even when the connection supporter 3, the error on the manufacture to the circuit board 1 or TAB2, and the deformation accompanying an external factor arise, both conductivity does not deteriorate. Of course, it is the same even when change of the configuration accompanying degradation of resin itself arises in the location where change of an operating environment is large.

[0017] Drawing 5 (a) and (b) are the front views and bottom views showing the 2nd operation gestalt of this invention. Here, connection supporter 3A is formed by flat spring, bending formation is carried out and the both ends of this flat spring are formed in the shape of a hook as stopper 31A. Flat spring is formed by the bending technique, and since the reinforcement is increased, it has formed two reinforcement slots 36 which carried out bending formation in the direction of board thickness along the die-length direction. Moreover, although the projection organizer 34 is supported in one by attachment etc. in the inferior surface of tongue of the connection supporter 3, the connection alignment projection 37 for the location immobilization is formed.

[0018] Moreover, concave 34a is formed in a top face, and the projection organizer 34 is supported by the close condition on the inferior surface of tongue of connection supporter 3A so that it may correspond to the reinforcement slot 36. And the projection 35 of two or more turns to the inferior surface of tongue of this projection organizer 34 caudad, and is projected and formed in it. It cannot be overemphasized that these projections 35 are the things corresponding to the connection electrode 22 and the connection land 11 which were shown in the 1st operation gestalt. Moreover, the projection 32 for alignment corresponding to the connecting location fixed hole 13 and the alignment hole 23 is projected and formed in the four-corners section of the inferior surface of tongue of the projection organizer 34.

[0019] If connection supporter 3A is engaged with the crevice 14 of the circuit board 1 in stopper 31A, the projection organizer 34 can be turned to TAB2 and the circuit board 1, and can be made to press elastically according to the elastic force of the connection supporter 3A itself with this operation gestalt. and it is the same as said operation gestalt for the projection 32 for alignment prepared in the projection organizer 34 to perform alignment to TAB2 and the circuit board 1, and to press the connection electrode 22 to the connection land 11 by projection 35, and to make electric connection, and it comes out. In addition, in order for the connection supporter 3A itself to function as flat spring with this operation gestalt, components mark are reduced and it is advantageous at small and the point which can carry out [lightweight]-izing.

[0020] Moreover, as shown in drawing 6 , in said 1st operation gestalt, it may replace with flat spring 33 and elastic material 33A, such as flexible resin or rubber, may be used, and you may constitute from sticking a projection organizer on the inferior surface of tongue of a connection supporter through this elastic material so that elastic force may be given to a projection organizer.

[0021]

[Effect of the Invention] As explained above, this invention equips with a connection supporter to the circuit board, and puts TAB between the circuit boards. Since turn to TAB the projection by which elastic support was carried out to this connection supporter, the connection land of the circuit board is made to press the connection electrode of TAB according to suppression ** SE and its suppression force and electrical connection of both is carried out While connection by solder becomes unnecessary and being able to detach and attach TAB easily Even when deformation arises in TAB and the circuit boards including a connection supporter or an impact is added, the contact condition of a connection electrode and a connection land can be secured according to the elastic force of a projection, and it is effective in the ability to hold a reliable mounting condition.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the partial decomposition perspective view of the 1st operation gestalt of this invention.

[Drawing 2] It is the sectional view of the direction of a transverse plane of drawing 1.

[Drawing 3] It is the sectional view of the direction of a side face of drawing 1.

[Drawing 4] It is the sectional view of the assembly condition of the 1st operation gestalt.

[Drawing 5] It is the 2nd front view and bottom view of an operation gestalt of this invention.

[Drawing 6] It is the front view of the modification of the 1st operation gestalt of this invention.

[Drawing 7] It is the sectional view of an example of the conventional mounting structure.

[Drawing 8] It is the front view of other examples of the conventional mounting structure.

[Drawing 9] It is the partial decomposition perspective view of an example of the mounting structure where the former was improved.

[Description of Notations]

1 Circuit Board

2 TAB

3 Connection Supporter

11 Connection Land

13 Connecting Location Fixed Hole

14 Crevice

22 Connection Electrode

23 Locating Hole

31 Stopper

32 Locating Lug

33 Flat Spring

34 Projection Organizer

35 Projection

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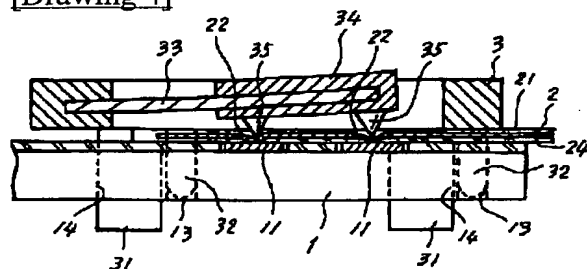
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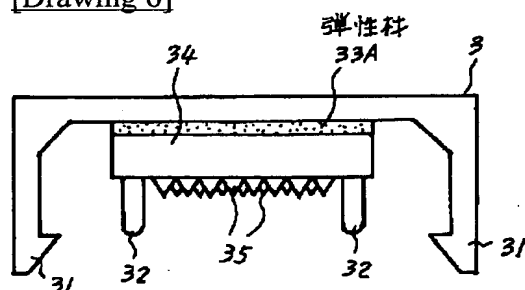
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DRAWINGS

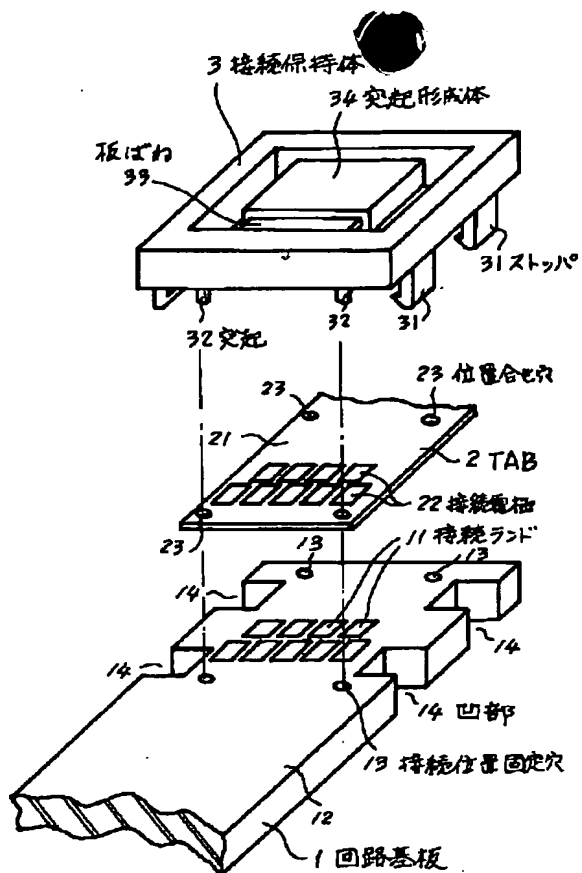
[Drawing 4]



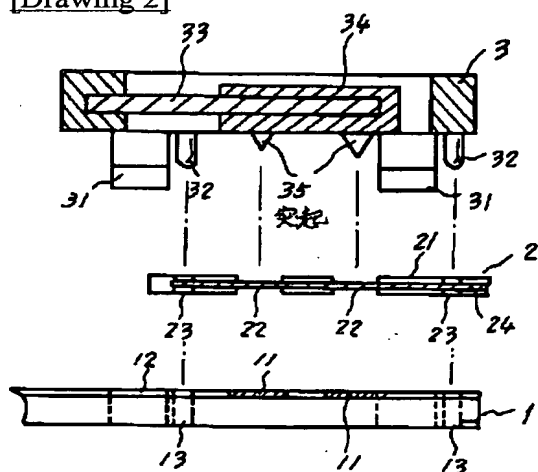
[Drawing 6]



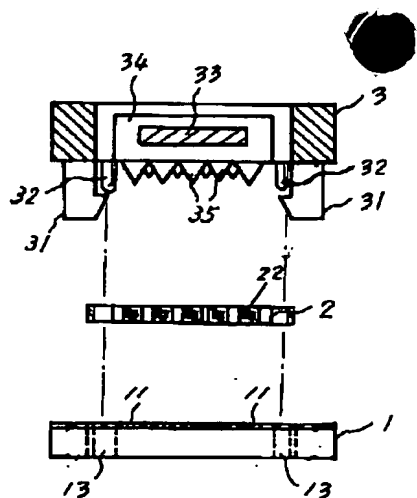
[Drawing 1]



[Drawing 2]

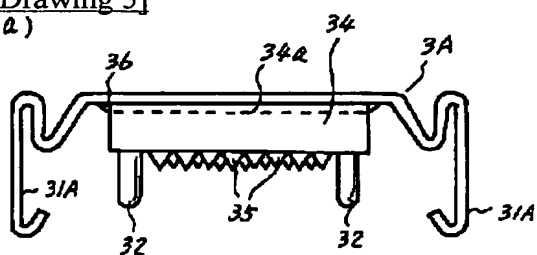


[Drawing 3]

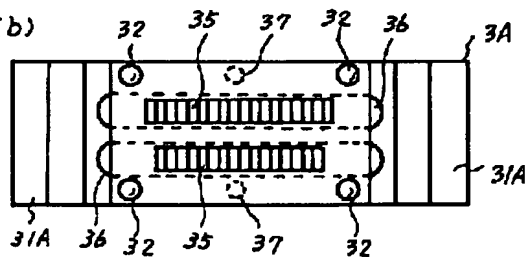


[Drawing 5]

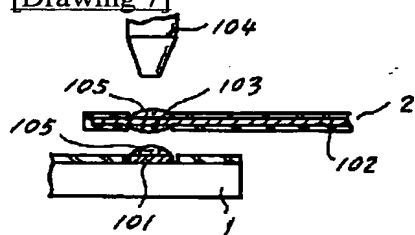
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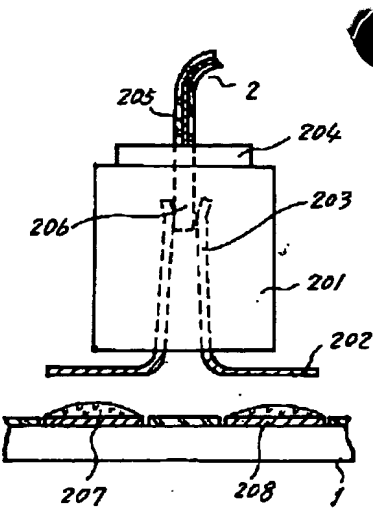
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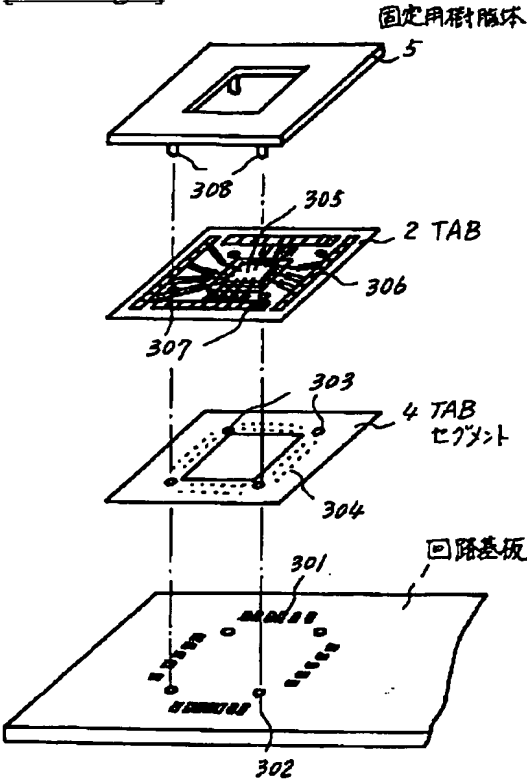
[Drawing 7]



[Drawing 8]



[Drawing 9]



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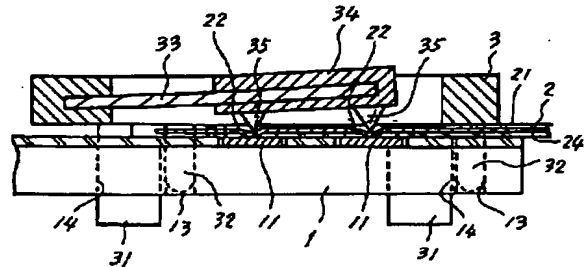
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(54) 【発明の名称】 TAB実装構造

(57) 【要約】

【課題】 TABを回路基板に半田付け実装すると、その着脱が面倒になる。また、固定部材を用いてTABを回路基板に押圧して実装すると、固定部材の変形により接続の信頼性が劣化される。

【解決手段】 回路基板1に対して接続保持体3を装着してTAB2を回路基板1との間に挟み込み、この接続保持体3に弾性支持された突起35をTAB2に向けて弾圧させ、その弾圧力によってTAB2の接続電極22を回路基板1の接続ランド11に押圧させて両者を電気接続する。半田による接続が不要となり、TABの着脱を容易に行うことができる。また接続保持体が変形された場合でも、突起の弾性力によって接続電極と接続ランドとの接触状態が確保される。



【特許請求の範囲】

【請求項1】 回路基板上にTABを搭載し、回路基板に設けた接続ランドと、TABに設けた接続電極とを互いに接触させて電気接続を行うようにしたTAB実装構造において、前記TABを回路基板との間に挟み込むように前記回路基板に着脱される接続保持体と、この接続保持体に弾性支持されて前記TABに向けて弾圧され、その弾圧力によって前記接続電極を接続ランドに押圧する突起とを備えることを特徴とするTAB実装構造。

【請求項2】 複数の接続電極及び接続ランドに対応位置された複数の突起が突起形成体に一体的に設けられ、この突起形成体は弾性材により接続保持体に弾性支持される請求項1のTAB実装構造。

【請求項3】 弾性材は、一端が接続保持体に片持支持された板ばねであり、この板ばねの他端に突起形成体を支持してなる請求項2のTAB実装構造。

【請求項4】 弾性材は、樹脂或いはゴム等の弾性素材であり、接続保持体と突起形成体との間に介挿してなる請求項2のTAB実装構造。

【請求項5】 回路基板上にTABを搭載し、回路基板に設けた接続ランドと、TABに設けた接続電極とを互いに接触させて電気接続を行うようにしたTAB実装構造において、前記TABを回路基板との間に挟み込むように前記回路基板に着脱される弾性材からなる接続保持体と、この接続保持体に支持されて前記TABに向けて弾圧され、その弾圧力によって前記接続電極を接続ランドに押圧する突起とを備えることを特徴とするTAB実装構造。

【請求項6】 回路基板及びTABには位置決め穴が設けられ、接続保持体または突起形成体に設けられた位置決め突起を前記位置決め穴に挿入して回路基板及びTABと接続保持体または突起形成体との位置決めを行う請求項1ないし5のいずれかのTAB実装構造。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】 本発明は回路基板にテープ型導電リード（TAB：Tape Automated Bonding）を実装するTAB実装構造に関し、特に着脱可能かつ高密度実装を可能にしたTAB実装構造に関する。

【0002】

【従来の技術】 従来、TAB実装を行う場合には、ろう材を用いた構造が採用されている。例えば、図7の技術は、回路基板1上に形成された接続ランド101にTAB2の配線導体102で形成された接続電極103を加熱したウェッジ104で半田105を溶かし、電気的かつ機械的に接続して実装を行っている。また、図8の技術は、樹脂体201の内部にリード端子202と一体のコネクタ構成の接続金具203が挿入されており、TAB2の一侧部を樹脂体201内に挿入しスライドストッ

バ204をスライドさせることにより、TAB2の配線導体205に形成されている接続電極206を接続金具203に電気的に接続する。また、樹脂体201から突出されているリード端子202を半田207を利用して回路基板1の接続ランド208に接続固定することにより、電気的かつ機械的に接続を行っている。

【0003】 しかしながら、これら従来の技術では、TABと回路基板とを半田により固定的に接続しているため、TABの着脱時には判断を溶かす必要があり、着脱の作業性が悪いという問題がある。また、溶融した半田が隣接する端子にまで流れ込んで短絡状態となり易く、微細ピッチの端子を有するTABへの適用が困難であり、高密度実装の障害となっている。

【0004】 これに対し、近年では半田を用いずに接続を行い、TABの着脱を容易にした実装構造が提案されている。例えば、特開平4-229692号公報では、図9のように、回路基板1上に接続ランド301と接続位置固定穴302を開設する。その上に、同じく複数の位置決め穴303と多数個の突起状の導電端子304を配置したTABセグメント4を載置する。この導電端子304はセグメント4の基板の表裏面のそれぞれに導電面が露呈された微細な端子である。さらに、その上にICチップ等の部品305が搭載されたTAB2を載置する。このTAB2には、前記接続ランド301と対応位置するように配置された接続電極306と、位置決め穴307が設けられる。

【0005】 そして、その上に固定用樹脂体5を載置し、これに設けた複数の突起308を前記位置決め穴307、303、接続位置固定穴302にさし込んで位置決めを行い、かつ固定用樹脂体5を回路基板1に向けて押圧した状態で回路基板1の下面において突起308の先端部を接着、或いははしめ等の手法により固定することにより、TABセグメント4の導電端子304を介してTAB2の接続電極306と回路基板1の接続ランド301が電気的に接続される。なお、固定用樹脂体5は全体的に十分な押圧力を得るため、アクリル樹脂またはビニル樹脂等の硬質の樹脂を使用している。

【0006】

【発明が解決しようとする課題】 この公報に記載の技術では、半田を用いていないため、TABの着脱を容易に行うことは可能である。しかしながら、回路基板1とTAB2とを固定用樹脂体5により押圧した状態で接続固定しているため、回路基板1が外部的な要因によって変形されたような場合に、硬質樹脂で構成されている固定用樹脂体5がこの変形に追従できず、接続部の間隔が広がり、電気的な接続が損なわれ、或いは導通性が劣化されるという問題がある。また、使用環境の変化が大きい場所においては、固定用樹脂体5自体の劣化に伴う形状の変化に追従できないため、電気的な接続が劣化されてしまう。本発明の目的は、環境変化に追従して常に好適な

電氣的接続状態を確保でき、かつ微細ピッチの端子の電氣接続を高密度で行うことが可能なTAB接続構造を提供することにある。

【0007】

【課題を解決するための手段】本発明のTAB実装構造は、回路基板に対して電氣接続するTABを回路基板との間に挟み込むように回路基板に着脱される接続保持体と、この接続保持体に弾性支持されてTABに向けて弾圧され、その弾圧力によってTABの接続電極を回路基板の接続ランドに押圧する突起とを備えている。この場合、複数の接続電極及び接続ランドに対応位置された複数の突起が突起形成体に一体的に設けられ、この突起形成体は弾性材により接続保持体に弾性支持される構成とする。また、弾性材としては、板ばね、あるいは樹脂或いはゴム等が用いられる。

【0008】また、本発明は、回路基板に着脱される接続保持体を弾性材で構成し、この接続保持体に支持されてTABに向けて弾圧され、その弾圧力によって接続電極を接続ランドに押圧する突起とを備える構成としてもよい。

【0009】

【発明の実施の形態】次に、本発明の実施形態を図面を参照して説明する。図1は本発明の第1の実施形態の部分分解斜視図であり、図2、図3はその正面方向と側面方向の各断面図である。これらの図に示すように、回路基板1上にはTAB2を接続するための接続ランド11と配線導体を覆うための絶縁膜12が形成されている。また、前記接続ランド11の周囲の四隅位置にはそれぞれ接続位置固定穴13が開設され、さらに両側辺にはそれぞれ一対の凹部14が形成されている。

【0010】また、前記TAB2は、絶縁フィルム21の複数箇所を除去することで配線導体24（図4参照）の一部を絶縁フィルム21より露出させ、接続電極22を形成している。これらの接続電極22は前記回路基板1の接続ランド11にそれぞれ対応位置される。また、TAB2には、回路基板1の接続位置固定穴13に対応する位置に4つの位置合せ穴23が開設されている。

【0011】接続保持体3はPBT樹脂やPPS樹脂等から矩形的枠状に形成されており、その両側辺には前記回路基板1の凹部14に係合されるフック状のストッパ31が立設される。また、前記接続位置固定穴13及び位置合せ穴23に対応する4本の位置合せ用突起32が、下方に向けて一体に突出形成されている。この場合、ストッパ31はTAB2の実装時に加わるストレスによって折れない程度の柔軟性を持たせてある。そして、前記接続保持体3の内部には、その一辺から中心に向けて板ばね33が片持支持されており、その先端部に突起形成体34が支持されている。

【0012】前記板ばね33は厚さ0.5mm以下で弾力性があり、復元性の良いステンレス等を用い、その基

端部をインサート成形方法や樹脂一体成形方法で接続保持体3に一体化している。また、前記突起形成体34は絶縁材で形成され、その下面には前記接続ランド11や接続電極22に対応する位置にそれぞれ突起35が突出形成されている。これらの突起35は先端を側面から見た角度が10～150度以内とし、かつ突起の先端は前記接続電極22の配置間隔寸法により丸みや平坦性を持たせている。

【0013】このように構成された回路基板1、TAB2、接続保持体3を組立てる場合には、先ずTAB2の位置合せ穴23と回路基板1の接続位置固定穴13とに順次接続保持体3の位置合せ用突起32をさし込み、さらに回路基板1の凹部14に接続保持体3のストッパ31を回路基板1を挟み込むように装着して両者を係合することにより、接続保持体3は回路基板1に一体的に取着され、これにより両者間にTAB2を挟み込み、TAB2を回路基板1に押圧する。

【0014】そして、この状態では、図4に実装状態の断面図を示すように、接続保持体3の突起形成体34が板ばね33のばね力によりTAB2側に弾圧されるため、突起形成体34に設けられた突起35が接続電極22を回路基板1の接続ランド11側に押し付ける。これにより、接続電極22と接続ランド11とが直接接触されて両者は電氣的に接続される。この電氣接続状態は、接続保持体3の板ばね33のばね力により保持れる。この板ばね33のばねの強さは板ばねの厚み及び大きさ、硬度により設定する。また、突起35はTAB2の接続電極22を押している状態では、板ばね33の反りによる突起形成体34の傾きを考慮し、左右の高さを幾分異なる量に設定しておく必要がある。

【0015】また、この実施形態では、TAB2の実装精度は回路基板1とTAB2と接続保持体3の各々の形成時の精度と、接続位置固定穴13と位置合せ穴23と位置合せ用突起32の円柱の直径に対するクリアランスにより決定される。なお、接続ランド11と接続電極22を本実施形態のように干鳥状に2列に配置した場合には、0.2mm間隔のTABの配線導体間隔の実装が可能である。

【0016】この実施形態によれば、接続保持体3のストッパ31を回路基板1の凹部14から離脱すればTAB2を回路基板1から離脱させることができ、半田等を用いた構成に比較してTABの着脱を容易に行うことができる。また、接続保持体3や回路基板1、或いはTAB2に製造上の誤差や、外部的な要因に伴う変形が生じた場合でも、突起形成体34が板ばね33により支持されてこの板ばね33のばね力によって突起35で接続電極22と接続ランド11とを接触させているため、両者の導通性が劣化されることもない。勿論、使用環境の変化が大きい場所において樹脂自体の劣化に伴う形状の変化が生じた場合でも同じである。

【0017】図5(a)、(b)は本発明の第2の実施形態を示す正面図と底面図である。ここでは、接続保持体3Aを板ばねで形成し、この板ばねの両端部をフック状に曲げ形成してストッパ31Aとして形成している。板ばねは曲げ加工技術により形成されており、その強度を増すために長さ方向に沿って板厚方向に曲げ形成した2本の補強溝36を設けている。また、接続保持体3の下面には突起形成体34を貼着等により一体的に支持しているが、その位置固定のための接続位置合せ突起37を設けている。

【0018】また、突起形成体34は補強溝36に対応するように上面に凹溝34aが形成されて接続保持体3Aの下面に密接状態に支持される。そして、この突起形成体34の下面には複数本の突起35が下方に向けて突出形成されている。これらの突起35は、第1実施形態において示した接続電極22と接続ランド11に対応するものであることは言うまでもない。また、突起形成体34の下面の四隅部には、接続位置固定穴13と位置合せ穴23とに対応する位置合せ用突起32が突出形成されている。

【0019】この実施形態では、接続保持体3Aをストッパ31Aにおいて回路基板1の凹部14に係合すれば、接続保持体3A自体の弾性力によって突起形成体34をTAB2及び回路基板1に向けて弾性的に押圧させることができる。そして、突起形成体34に設けた位置合せ用突起32によりTAB2、回路基板1に対する位置合わせを行い、かつ突起35で接続電極22を接続ランド11に押圧して電気的な接続を行うことは前記実施形態と同じである。なお、この実施形態では、接続保持体3A自身が板ばねとして機能するため、部品点数を削減し、かつ小型、軽量化できる点で有利である。

【0020】また、図6に示すように、前記第1の実施形態において、板ばね33に代えて柔軟な樹脂、或いはゴム等の弾性素材33Aを利用し、この弾性素材を介して突起形成体を接続保持体の下面に貼り付けることで、突起形成体に弾性力を付与するように構成してもよい。

【0021】

【発明の効果】以上説明したように本発明は、回路基板に対して接続保持体を装着してTABを回路基板との間*

*に挟み込み、この接続保持体に弾性支持された突起をTABに向けて弾圧させ、その弾圧力によってTABの接続電極を回路基板の接続ランドに押圧させて両者を電気接続している。半田による接続が不要となり、TABの着脱を容易に行うことができるとともに、接続保持体を始めとしてTABや回路基板に変形が生じ、或いは衝撃が加えられたような場合でも、突起の弾性力によって接続電極と接続ランドとの接触状態を確保することができ、信頼性の高い実装状態を保持することができる効果がある。

【図面の簡単な説明】

【図1】本発明の第1の実施形態の部分分解斜視図である。

【図2】図1の正面方向の断面図である。

【図3】図1の側面方向の断面図である。

【図4】第1の実施形態の組立状態の断面図である。

【図5】本発明の第2の実施形態の正面図と底面図である。

【図6】本発明の第1の実施形態の変形例の正面図である。

【図7】従来の実装構造の一例の断面図である。

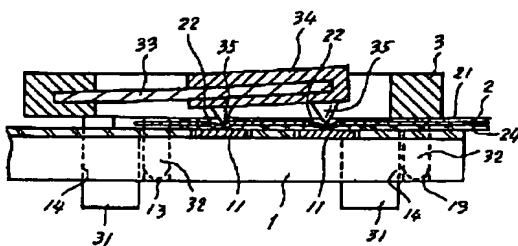
【図8】従来の実装構造の他の例の正面図である。

【図9】従来の改良された実装構造の一例の部分分解斜視図である。

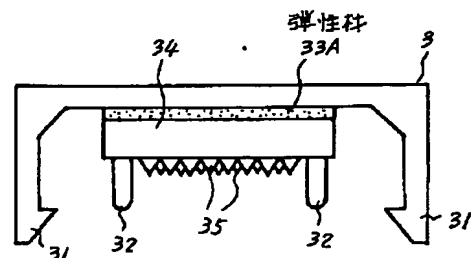
【符号の説明】

- 1 回路基板
- 2 TAB
- 3 接続保持体
- 11 接続ランド
- 13 接続位置固定穴
- 14 凹部
- 22 接続電極
- 23 位置決め穴
- 31 ストッパ
- 32 位置決め突起
- 33 板ばね
- 34 突起形成体
- 35 突起

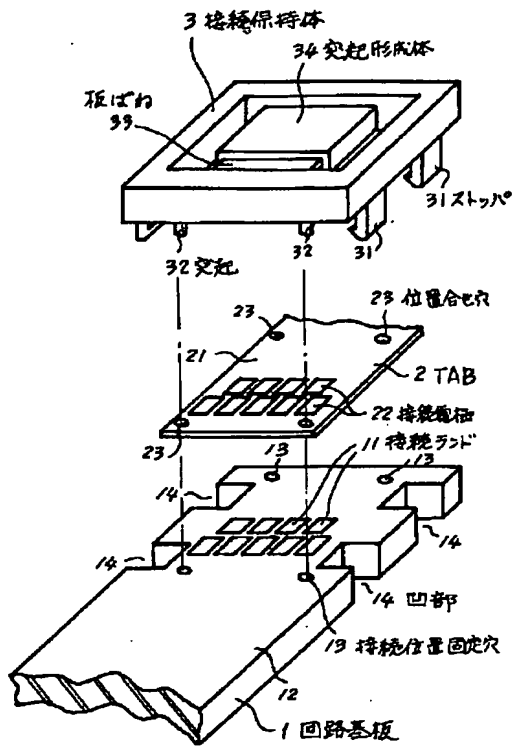
【図4】



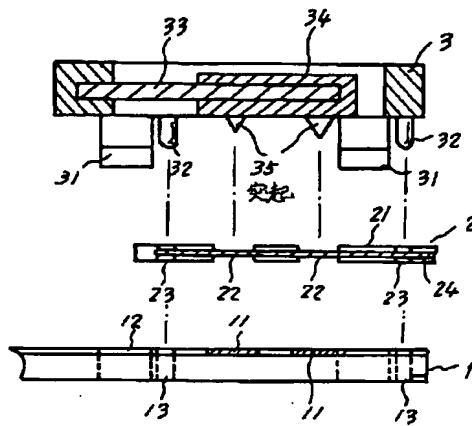
【図6】



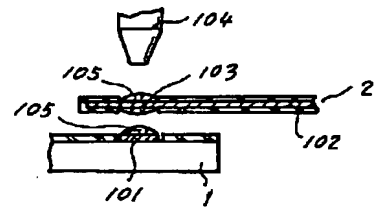
【图 1】



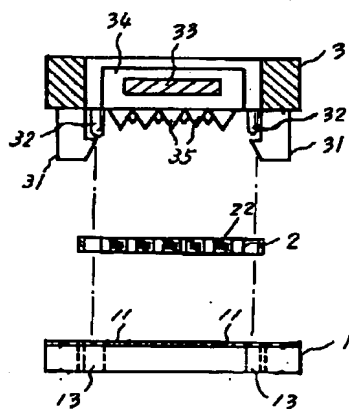
【図2】



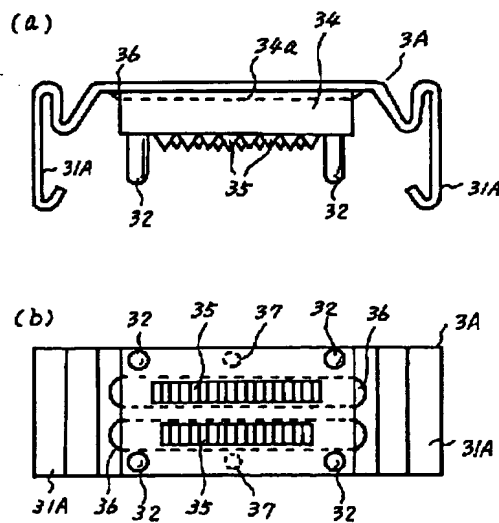
【圖 7】



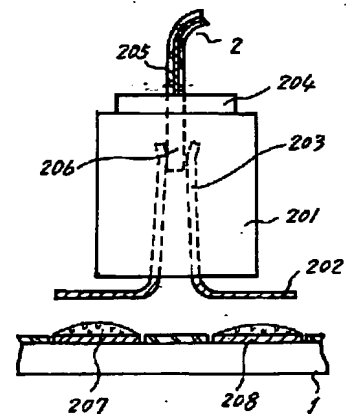
【図 3】



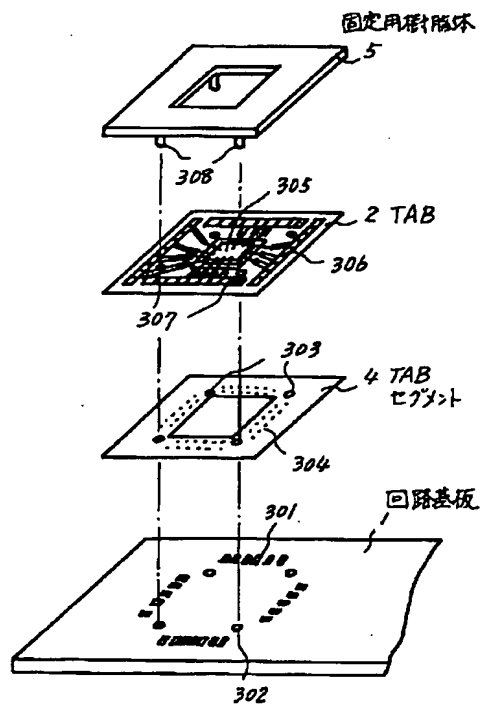
【図5】



【図 8】



【図9】



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